

WHAT IS CLAIMED IS:

1. An optical pickup apparatus for a recording medium having a light transmitting layer on which an information signal is recorded, comprising:

    a light source for emitting light;

    an objective lens for focusing the light emitted from the light source onto the recording medium;

    focusing driving means for moving the objective lens in a first direction which is parallel to an optical axis thereof;

    tracking driving means for driving the objective lens in a second direction which is perpendicular to the optical axis;

    a lens assembly disposed between the light source and the objective lens and having a plurality of lenses each of which is independently displaceable along an optical axis thereof; and

    driving means for displacing the lenses in the lens assembly independently of each other along the optical axes thereof in such a manner as to reduce a spherical aberration caused due to a thickness of the light transmitting layer and spherical aberrations which occur on optical surfaces of an optical system.

2. The optical pickup apparatus of claim 1, further comprising:

    a first lens as one of the plurality of lenses in the lens assembly, wherein the first lens is disposed in a plane

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containing an axis line of the recording medium and has an optical axis parallel to the axis line;

optical reflective means disposed on the optical axis at a position nearer to the light source than the first lens is; and

a second lens as one of the plurality of lenses in the lens assembly, wherein the second lens is disposed nearer to the light source than the optical reflective means is.

3. The optical pickup apparatus of claim 2, further comprising:

a first voice coil provided on the objective lens and wound about the optical axis;

a second voice coil provided on the first lens in the lens assembly and wound about the optical axis;

a pair of permanent magnet pieces disposed outward of the first and second voice coils and having magnetic poles oriented perpendicularly to the optical axis;

focusing driving means for performing focusing by varying a current in the first voice coil;

first driving means for performing positioning according to a type of the recording medium by feeding a current to the second voice coil; and

second driving means for performing positioning according to the type of the recording medium by driving the second lens along the optical axis thereof.

4. The optical pickup apparatus of claim 3, wherein an amount of movement of the first lens driven by the first driving means differs from an amount of movement of the second lens driven by the second driving means.

5. The optical pickup apparatus of claim 4, wherein an amount of movement of the first lens driven by the first driving means is smaller than an amount of movement of the second lens driven by the second driving means.

6. The optical pickup apparatus of claim 2, further comprising:  
a first supporting structure for supporting the first lens; and  
a second supporting structure for supporting the second lens, and  
at least one of the first and second supporting structures includes:

a first supporting member, formed of an elastic material, extending in a direction perpendicular to the optical axis; and

a second supporting member, formed of an elastic material, provided parallel to and spaced from the first supporting member in the direction of the optical axis.

7. The optical pickup apparatus of claim 6, wherein a center of mass of one of the first and second lenses is located about midway between the first and second supporting members along the direction of the optical axis.